HW #3

1. Homework Assignment: Simple Phone Directory

Create a C++ program that simulates a simple phone directory. The directory will hold people's names and their associated phone numbers using C-style strings (arrays of char). Your program should enable the user to:

(1) Initialize the Directory: Have a predefined list of names and phone numbers stored in an array of pointers to strings.
(2) Print the Directory: Display all the names and their associated phone numbers.
(3) Find a Phone Number: Allow the user to enter a name and search for the corresponding phone number.
(4) Update a Phone Number: Allow the user to update the phone number associated with a given name.

Requirements:

For this homework, you can limit the directory size to a fixed number (e.g., 5 entries).

- Do not use dynamic memory allocation or modify the size of the directory after its initial definition.
- Do not use the <`cstring`> library for operations such as comparing or copying strings. Instead, implement your own functions for any string operations you need.
- Only the phone numbers can be changed. Do not allow modification of the names array.
- Do not use the `std::string` class or any library functions not covered in the course up to this point.
- Ensure your program handles cases where the user may enter names or numbers that do not exist in the directory gracefully.
- Use `std::cout` for output and `std::cin.getline()` for input to handle spaces in input strings properly.
- **Demonstrate and test your program thoroughly to ensure all scenarios are handled gracefully.**

Sample Code Outline:

```
#include <iostream>

// Assuming a maximum of 10 entries in the directory
const int DIRECTORY_SIZE = 10;

// Array of pointers to names (C-style strings)
const char *names[DIRECTORY_SIZE] = {/* Predefined names */};

// Array of pointers to phone numbers (C-style strings)
const char *phoneNumbers[DIRECTORY_SIZE] = {/* Predefined phone numbers */};

// Function prototypes
void printDirectory();
void findPhoneNumber(const char *name);
void updatePhoneNumber(const char *name, const char *newNumber);

int main() {
   // Program entry point
   return 0;
}

// Implement the functions here
```

Guidelines for Implementation:

- Implement custom functions for any string comparisons or manipulations needed, as you cannot use `<cstring>`.
- Ensure you interact with the user through the console for operations like finding or updating phone numbers.
- When updating a phone number, ensure that the name exists in the directory before attempting an update.
- Be mindful of array bounds and ensure you do not access out of range elements.